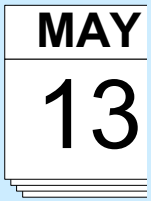
Travel Time for Performance Measures

NATMEC Session B4

5/13/02

Gordon Morgan, Florida DOT



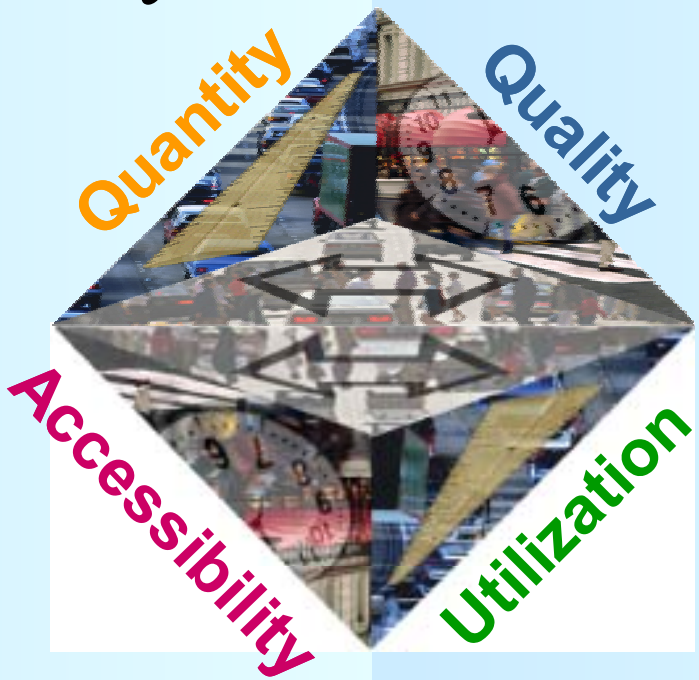
Today

Travel time…

- Tools
- Users
- Uses (including reliability)
- Data collection considerations

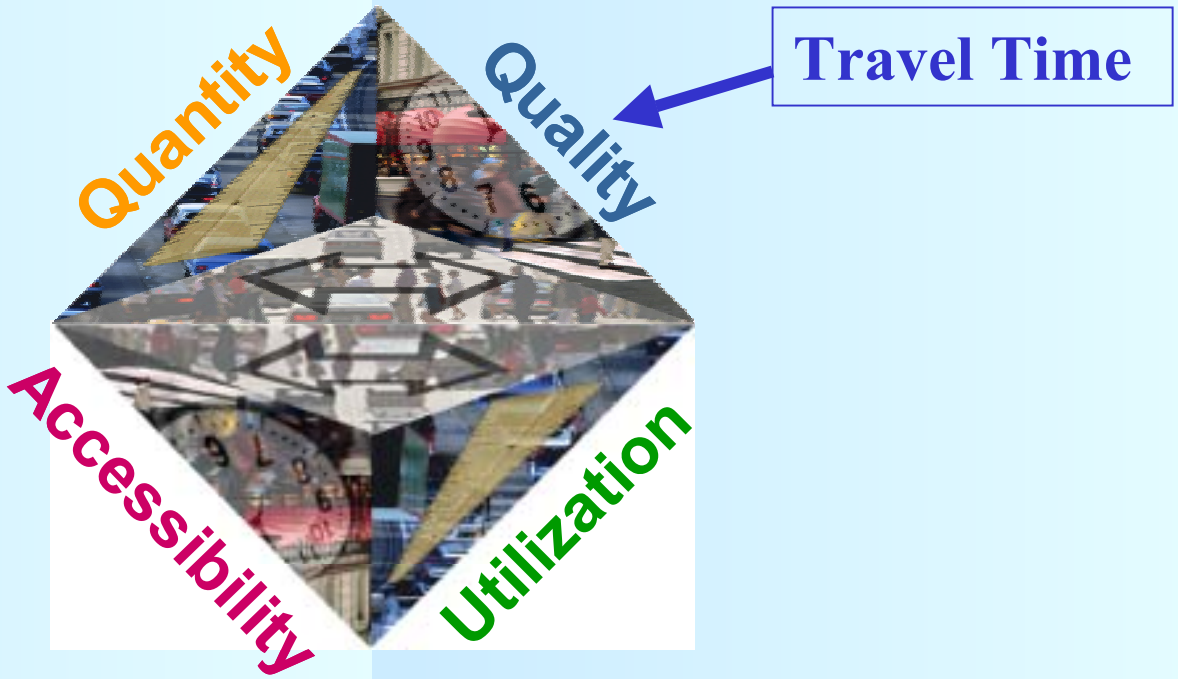
Dimensions of Mobility

- Inventory
- Performance



Dimensions of Mobility

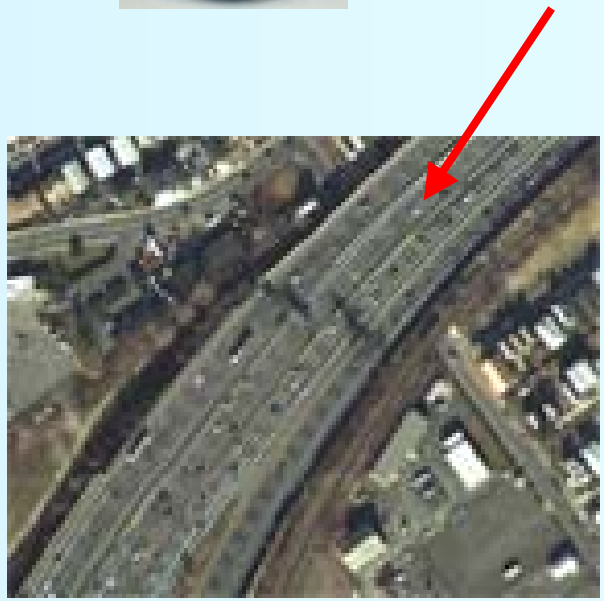
- Inventory
- Performance



Travel Time Tools

- Floating cars
  - Specifically for timing

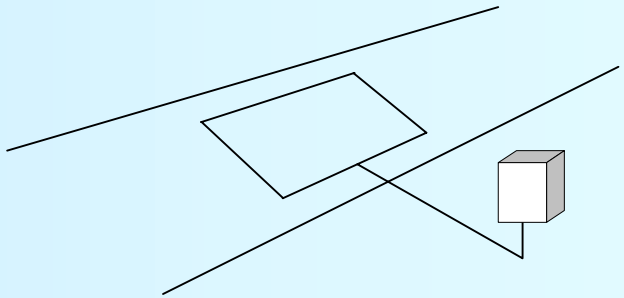
- Probes: Session B3
  - Cell phones
  - Toll transponders
  - Other?



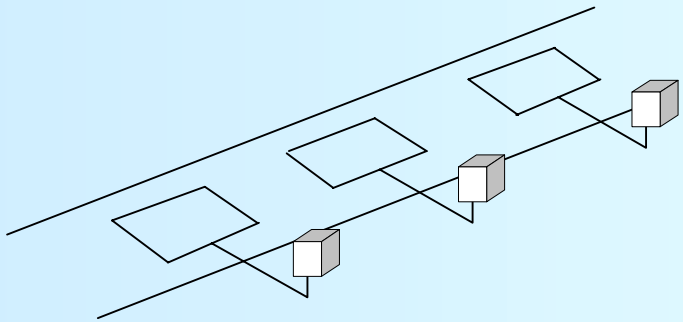
Travel Time Tools

Convert speed to time

- Loops: Track A



- ITS (many loops): Track C



Travel Time Tools

Tools discussed during this session…

- Video from a van: Brian Smith



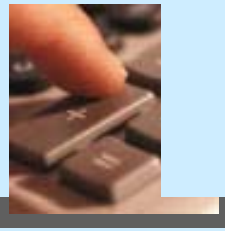
- License plate matching: Jeff Woodson

?


Travel Time Tools

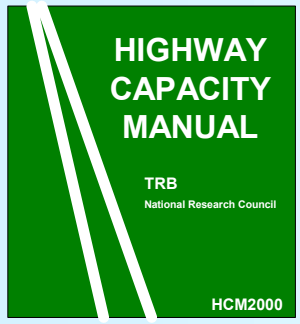
- Aerial, satellite photos : B6, B12

- Other: Track A

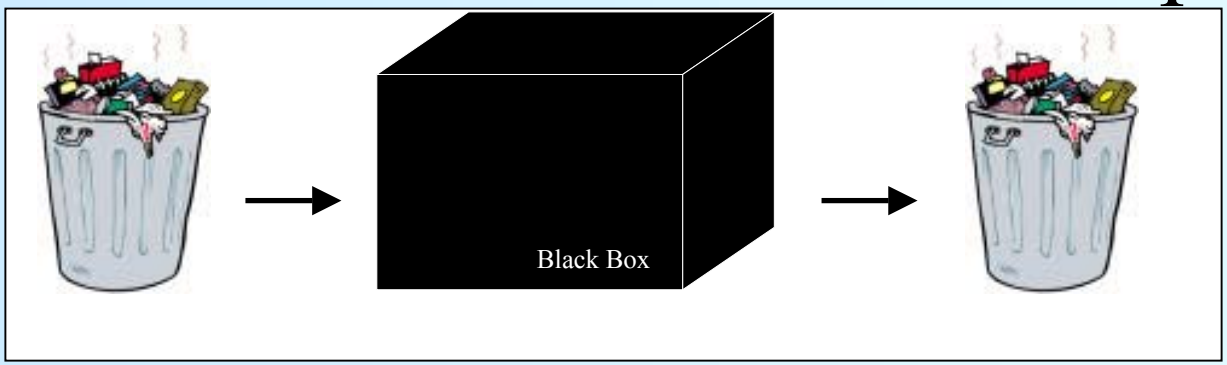


Calculate Travel Time

- Based on empirically derived speed-flow relationships



- Calculations are no better than inputs

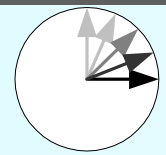


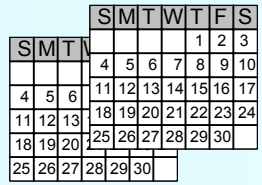
Collection Considerations-Space

- Location…Right place, or representative?
- Area type…Rural, urban, urbanized properly represented?
- Facility type…Interstate, arterial, etc. ?
- Interval between measurements appropriate?

Collection Considerations-Time

- Time interval (hour? 15 minutes?)
- Time extent (a day? 3 months?)
- Accuracy (number correct?)
- Precision (nearest Second? Minute?)





So What?

- What good does it do to know the travel time?
- What else is needed?

Travel Time Users

- Transportation agencies
- Shippers
- Transit agencies
- National decision makers
- Drivers

DOT Users—Transp. Agencies

- Analyze conditions
- Quantify or illustrate a problem
- Make construction decisions
  - Which facilities are over- or under-utilized?
  - What methods would help?

Users--Shippers

- Route Decisions
- Just-in-time Deliveries

Users--Transit Agencies

- Route decisions
- Don’t strand the customers

Users--Decision Makers

- What funds are needed?
- How should these funds be distributed?
- National, State, and Local levels

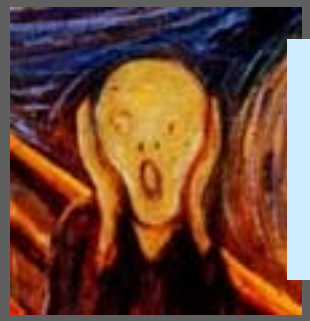
Users--Drivers

- Commuting choices
- Shopping, errands
- Vacation travel

Users → Uses

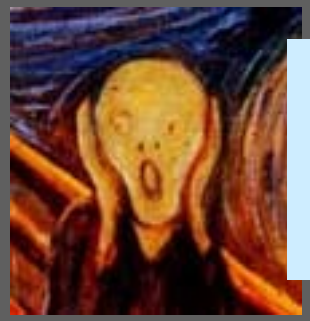
Travel time used for…

1. How *bad* is congestion?
2. Is it getting *better*?
3. Is it worse *here*?
4. Is the travel time *reliable*?



Uses: 1. How Bad Is It?

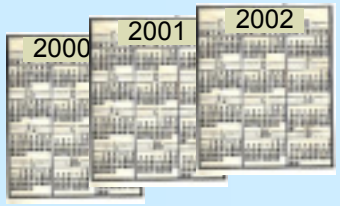
- Compare actual to potential travel time
- Variety of possible uses
  - Area-wide… City, County, State, Nation?
  - Area type… Urbanized, urban, rural?
  - System-wide… Interstates? Local roads?



Uses: 1. How Bad Is It?

Data collection considerations

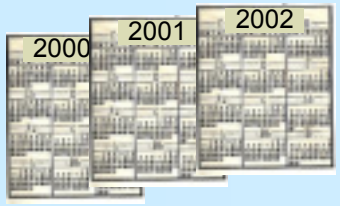
- Area needs to be represented
  - Not just one part, or one type of road
- Accuracy & Precision less important
- Calculations often sufficient



Uses: 2. Is it getting Better?

Compare current travel time (or delay) to earlier data

- Annual trends
  - see session C11, Robert Winick
- Seasonal comparisons



Uses: 2. Is it getting Better?

Data collection considerations

- Same as before
- Plus: consistency over time
  - Collection methods
  - Geographic coverage
  - Accuracy levels

Uses: 3. Is it worse *here*?

For example

- Compare states, urban areas, road types
- Compare individual facilities

Uses: 3. Is it worse *here*?

Data collection considerations

- For comparing areas…
  - Each area represented well by data
  - Areas represented consistently
- For comparing individual facilities
  - Accuracy is important

Uses: 4. Is travel time *reliable*?

Compare *actual* travel time to *expected*

- My trip takes 20 minutes *off-peak*, and 40 minutes *on-peak*.
- Will it *always* be about 40 minutes?
- How often will it be 2 hours?

Reliability – What?

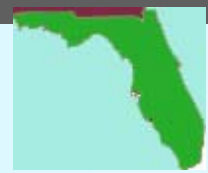
- How *consistent* is the travel time at a given time of day and location?
- Consistently *High* or Consistently *Low* is not an issue
- Unreliability is usually related to a combination of congestion and incidents

Reliability – Why?

- Just-in-time delivery
- Catch-a-flight type destinations
- Aggravation

Reliability – How?

Florida Reliability Method



- Pick a place and time (5-6 pm)
- Determine median travel time
- Determine acceptable travel time (20% more?)
- What percentage of trips take an acceptable time?

Reliability – How?

Special data needs:

- Collect for at least four to six weeks
- Include incidents
- Distance intervals: Short for accurate timing
- Time interval:
  - less than travel time
  - Usually no more than 5-15 minutes

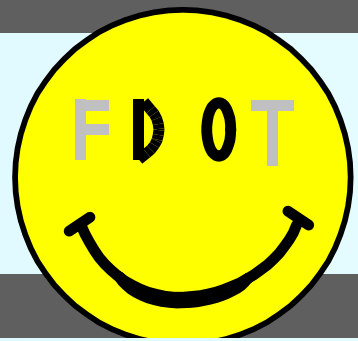
Reliability – More…

- See Session C11, Dena Jackson

Summary

- Many ways to get travel time
- Many uses for travel time
- Match the method to the usage

Thank You



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